1 # Space-Efficient Side-channel Attack Resistant Table Lookups.

2 ## ABSTRACT OF THE INVENTION

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4 Methods, apparatus and computer software and hardware products providing method, apparatus

5 and system solutions for implementing table lookups in a side-channel attack resistant manner.

6 Embodiments are provided for devices and situations where there is limited amount of RAM

7 memory available or restrictions on memory addressing. The solutions solve problems associated

8 with look up tables with large indices, as well as problems associated with looking up large

9 sized tables or a collection of tables of large cumulative size, in limited devices, in an efficient

10 side-channel attack resistant manner. These solutions provide defenses against both first-order

11 side channel attacks as well as higher-order side channel attacks. One aspect of the present

12 invention is the creation of one or more random tables which are used possibly in conjunction

13 with other tables to perform a table lookup. This denies an adversary information about the

14 table lookup from the side channel and thereby imparting side-channel resistance to the table

15 lookup operation. Another aspect of the present invention is the use of a combination of some

16 operations such as Table Split, Table Mask and Table Aggregate, to achieve this side-channel

17 resistance within the limited amounts of available RAM and limited memory addressing

18 capabilities of the device performing table lookups.